

Effect of Medicine Ball Exercise on Explosive Power and Serving Ability of University Level Volleyball Players

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ABSTRACT

To achieve the purpose of the present study thirty subjects were selected from Central University of Tamil Nadu Thiruvarur. Their age ranged from 19 to 21 years. They were assigned to two group namely experimental group-I with fifteen boys who were given medicine ball exercises for 12 weeks five days a week and from 5 pm to 6 pm and other group-II with fifteen boys acted as control group. The experimental group was tested on explosive power and serving ability. The selected criterion variables explosive power was tested with vertical jump test and serving ability was tested with Russell Lange service test. After twelve weeks medicine ball exercise training post test data were collected and treated with ANCOVA. The level of confidence was fixed at 0.05. The study result showed that the experimental group had significantly altered selected variables explosive power and serving ability which was due to the effect of medicine ball exercise training programme. The control group did not improve on selected criterion variables.

Keywords: Medicine Ball Exercises; Explosive Power and Serving Ability; University Level Volleyball Players.

Introduction

Physical fitness is one's richest possession. It cannot be purchased. It has to be earned through a daily routine of physical exercises. It is self-evident that the fit citizens are a nation's best assets and weak ones its liabilities. It is therefore the responsibility of every country to promote physical fitness of its citizens, because physical fitness is basic the requirement for most of the tasks to be undertaken by an individual in his daily life and if he fails to develop physical powers, he is undermining his capacity for thought and for work, which are of vital importance to one's pawn life and society in a welfare state. Explosive power is one of the major components physical fitness.

Training means a systematic scientific programme of conditioning exercise and physical activities designed to improve physical fitness and skills of the players or athletes. Sports training aims to achieve high performance in sports competitions. It is a process which is spread over a long period of time and is a competition cum performance oriented endeavor as well. Sports training is the process of sports protection based on scientific and pedagogical principals for higher performance. Training means preparing for something for an event or reason of improving the performance (Haradyalsingh, 1997).

Volleyball fundamental skills are service, blocking, smash and setting. The most dominant skill in service requires more power. The ability to generate strength and power is a very important component for success in many sports, particularly in those involving explosive moments. Medicine ball training in conjunction with a program of weight training and circuit training can develop strength and power. Certain medicine ball exercises can also be used as part of a plyometric training program to develop explosive movements. Medicine ball training is appropriate to all levels of ability, age and development of sport. The power is produced through specific drill and specialized equipment for medicine ball. The variety of exercise cause significant changes in explosive power. Medicine ball training is one of the many components in an individual's routine. Medicine ball exercises promote variety by introducing a novel

stimulus for physiological adaptation. Medicine balls are an appropriate implement for power training because there is no deceleration phase at the end of the concentric movement, similar to sports movements (Ikeda et al., 2009). The purpose of the study was to find out effect of medicine ball exercises on selected explosive power and serving ability of Central University of Tamil Nadu Thiruvarur level volleyball players.

Methodology

To achieve the purpose of the present study thirty subjects were from Central University of Tamil Nadu Thiruvarur. Their age ranged from 19 to 21 years. They were assigned to two groups namely experimental group-I fifteen boys who were given medicine ball exercises for 12 weeks 5 days a week evening 5 pm to 6 pm and other group-II with fifteen boys acted as control group. Both the groups were tested on explosive power and serving ability. The selected criterion variables explosive power was tested with vertical jump test and serving ability was tested with Russell Lange service test. After twelve weeks medicine ball exercise training post test data were collected and treated with ANCOVA. The level of confidence was fixed at 0.05.

Training Program

Week	1	2	3	4	5	6	7	8	9	10	11	12
REP	5	5	6	6	7	7	8	8	9	9	10	10
SET	7	7	9	9	8	8	7	7	6	6	5	5
REST/REP	30'S	Warming up 10 min										
REST/SET	60'S	Cool down 10 min										

Medicine Ball Exercises

1. Standing torso twist 5. Downward pass
2. Hamstring curl 6. Lay back double arm throw
3. Chest Push 7. Straight arm standing throw
4. Vertical upward pass 8. Standing double arm throw

Results

Table 1. Analysis of Co Variance on Explosive Power of Experimental Group and Control Group of University Level Volleyball Players

Test	Mean S.D	Experimental Group	Control Group	Sources of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
Pre-test	\bar{x}	34.0	33.93	B	0.033	1	0.033	0.001
	δ	6.14	3.08	W	660.933	28	23.605	

Post-test	\bar{x}	41.27	34.53	B	340.033	1	340.033	14.86*
	δ	4.62	4.94	W	640.667	28	22.881	
Adjusted Post-test	\bar{x}	41.26	34.54	B	339.379	1	339.379	14.4*
				W	634.75	27	23.509	

*Significant .05 level of confidence.

(The table values required for significance at .05 level of confidence with df 1 and 28 and 1 and 27 were 4.20 and 4.21 respectively).

It is clear from the table-1 that the pre test ($F = 0.001$, $p > 0.05$) showed no significant difference in explosive power. However, post test ($F = 14.86$, $p < 0.05$) and adjusted post test ($F = 14.4$, $p < 0.05$) value showed significant difference. The covariate is significant, indicating that explosive power had a significant improvement after 12 weeks of medicine ball exercises training, since, adjusted $p < 0.05$ and adjusted post test ($F = 14.4$, $p < 0.05$) value showed significant difference. The covariate is significant, indicating that explosive power had a significant improvement after 12 weeks of medicine ball exercises training, since, adjusted post test mean is significant.

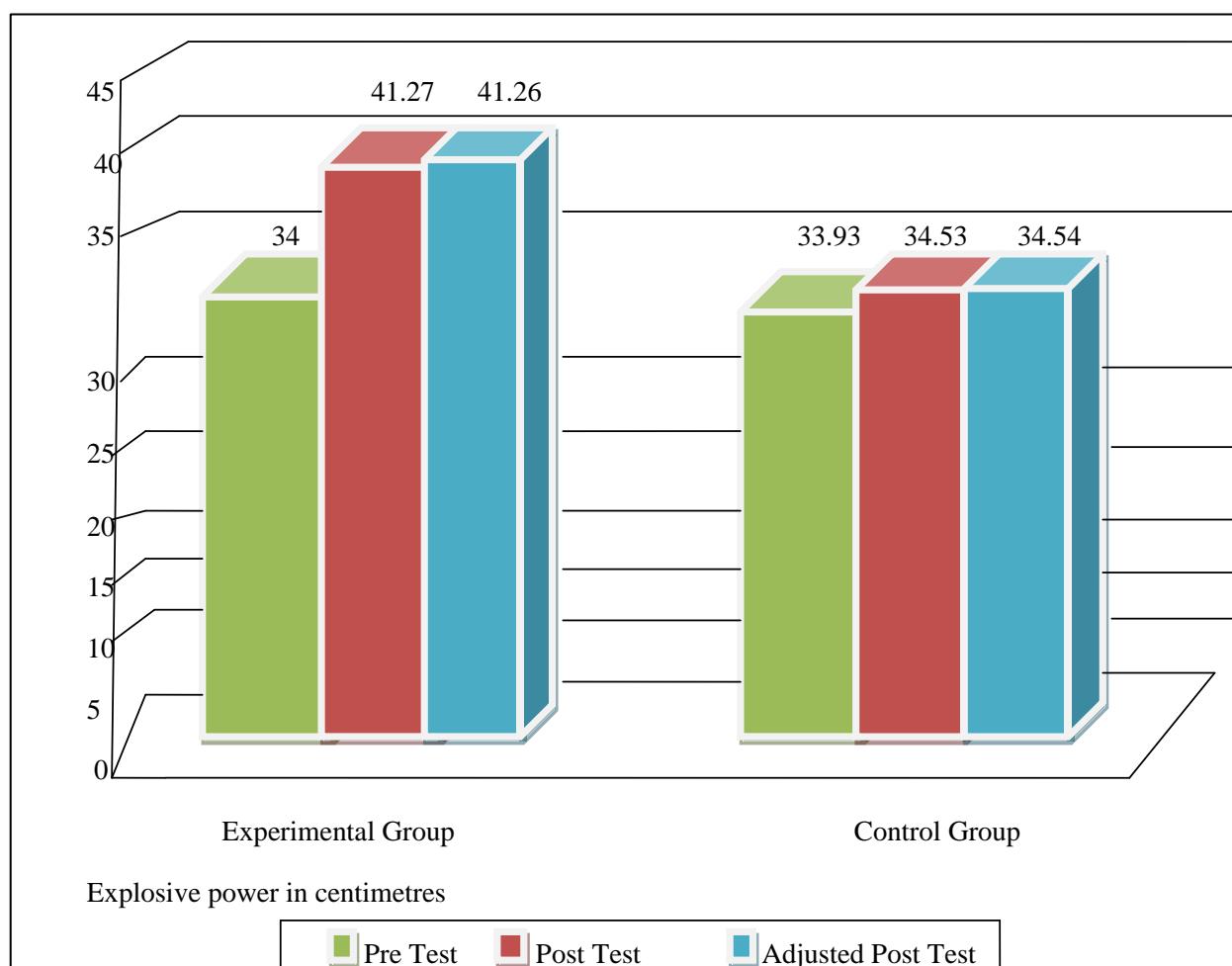


Figure 1. Bar Diagram Showing Mean Values on Experimental and Control Group of Explosive Power on University Level Volleyball Players

Table 2. Analysis of Co Variance on Serving Ability of Experimental Group and Control Group University Level Volleyball Players

Test	Mean S.D	Experimental Group	Control Group	Sources of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
Pre-test	\bar{x}	25.2	25.0	B	0.300	1	0.300	0.046
	δ	2.67	2.44	W	184.4	28	6.586	
Post-test	\bar{x}	34.53	24.2	B	800.83	1	800.83	52.4*
	δ	4.94	2.48	W	428.13	28	15.29	
Adjusted Post-test	\bar{x}	34.42	24.31	B	765.266	1	765.266	104.8*
				W	197.109	27	7.30	

*Significant .05 level of confidence.

(The table value required for significant at .05 level of confidence with df 1 and 27 were 4.20 and 4.21 respectively).

It is clear from the table – 2 that the pre test ($F = 0.046, p > 0.05$) showed no significant difference in serving ability. However, post test ($F = 104.8, p < 0.05$) and adjusted post test ($F = 104.8, p < 0.05$) value showed significant difference. The covariate is significant, indicating that serving ability had a significant improvement after 12 weeks of medicine ball exercises training, since, adjusted post test mean is significant.

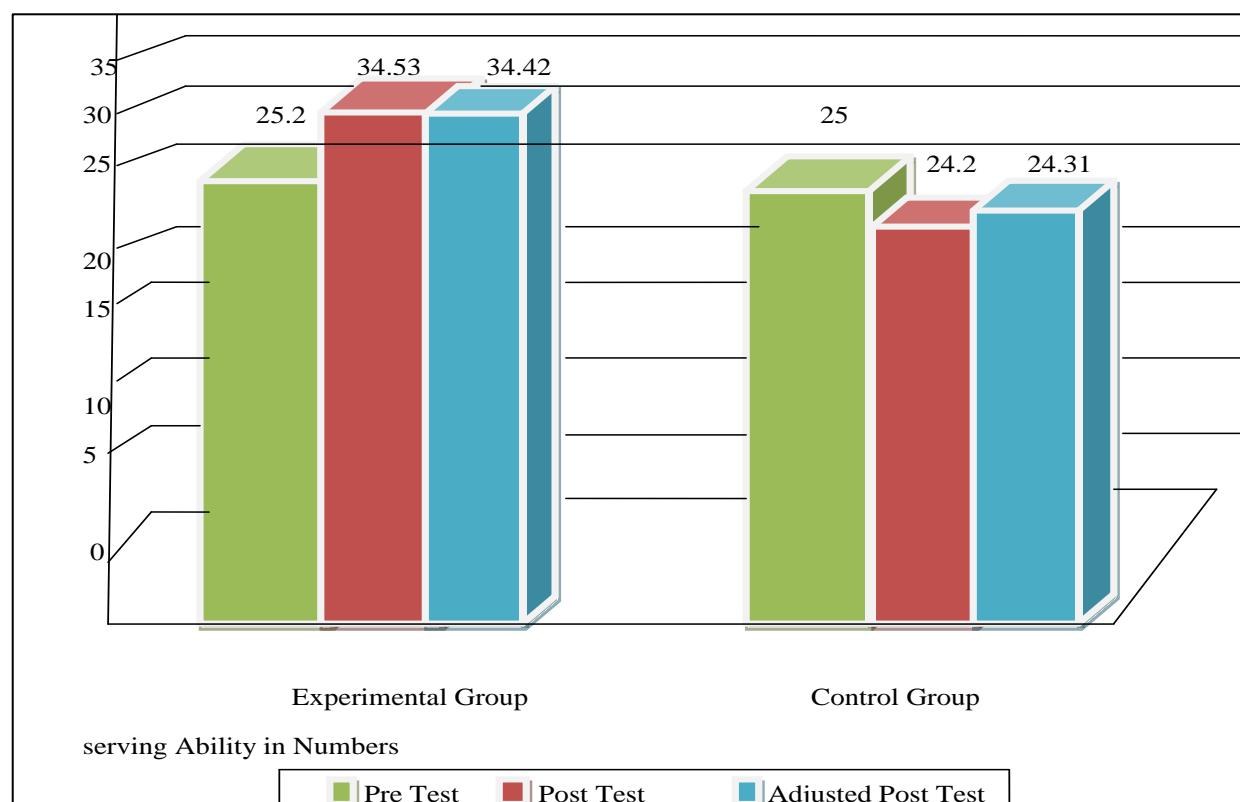


Figure 2. Bar Diagram Showing Mean Values on Experimental and Control Group of Explosive Power on University Level Volleyball Players

Discussion on Findings

The result of the study indicate that the effect of medicine ball exercises training which involved various throwing, bending exercises, twisting exercises on the University level volleyball players for twelve weeks of medicine ball exercise training had significantly improved explosive power and serving ability. The result of the study is in consonance with the result of other studies. Medicine ball training on high school boys improved on explosive power (Szymanski 2007). The prepubescent players trained with medicine balls it has improved on power (Mallory Kodak 2013). Effect of medicine ball training of physical education students of twelve weeks training improved explosive power and strength (Merlin Thanga Daniel 2015). Regular participation in a progressive medicine ball training program produced greater magnitudes of improvement in fitness performance (Faigenbaum et al., 2002) and effects of medicine ball training improved on muscle power of handball players (Aleksander et.al., 2012) and medicine ball training was improved on fitness components of high University students (Faigenbaum and Mediate 2006).

Conclusions

The experimental group had significantly improved the selected explosive power and serving ability of University level volleyball players due to the effect of medicine ball exercises training programme. The control group did not improve on selected explosive power and serving ability.

Declarations

Source of Funding

The study has not received any funds from any organization.

Competing Interests Statement

The author has declared no competing interests.

Consent for Publication

The author declares that he consented to the publication of this study.

References

Aleksander, M., Ignatovic., Zivorad, M., Markovic, and Dragan, S. Radovanovic (2012). Effects of 12 week medicine ball training on muscles strength and power on young female handball players. *Journal of Strength and Conditioning Research*, 26(8): 2166-2173.

Hardayal, Singh (1997). *Science of Sports Training*. New Delhi: D.V.S. Publications.

Faigenbaum, A.D., Milliken, L.A., Doherty, C.L., and Westcott, W.L. (2002). Comparison of 1st and 2nd days per week of strength training in children. *Research Quarterly for Exercise and Sport*, 73: 416-424.

Faigenbaum, A., and Mediate, P. (2006). The effects of medicine ball training on physical fitness in high school physical education students. *Physical Education*, 63: 160-167.

Ikeda, Y., Miyat Suji, K., Kawabata, K., Fuchinoto, T., and Ito, A. (2009). Anallysis of trunk muscle activity in the side medicine ball throw. *Journal of Strength and Conditioning Research*, 23(8): 2231-2240.